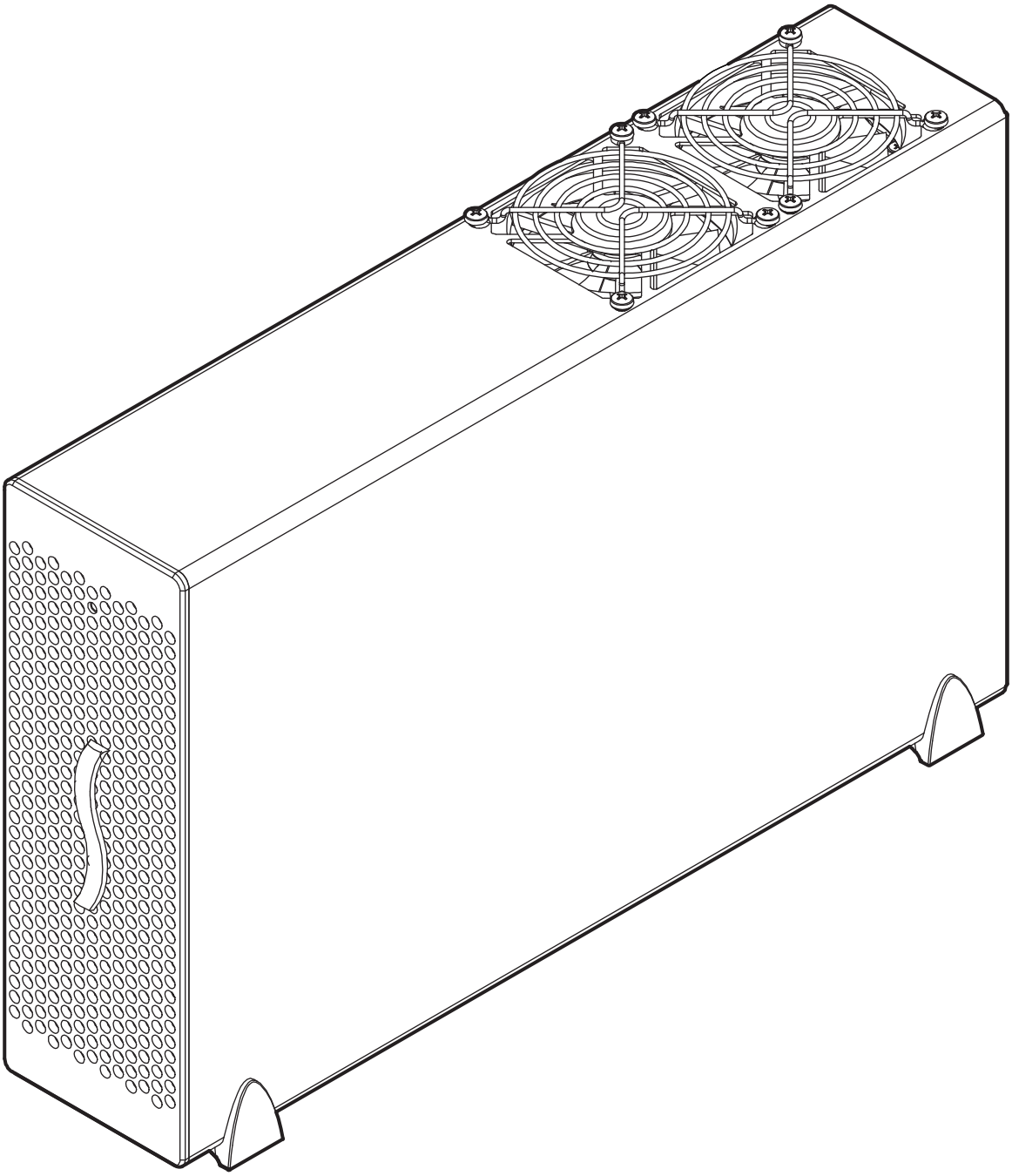
User's Guide

for Echo™ Express III-D Desktop Thunderbolt™ 2-to-PCIe Card Expansion Chassis



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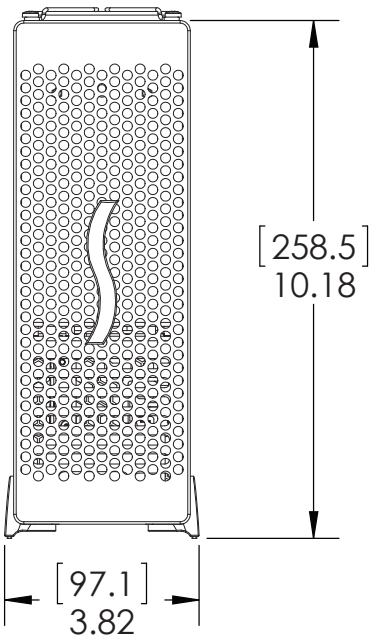
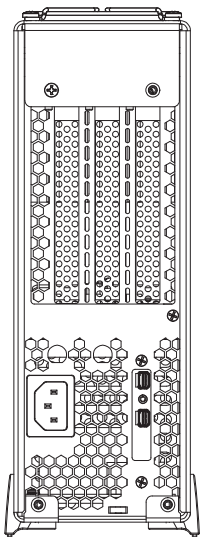
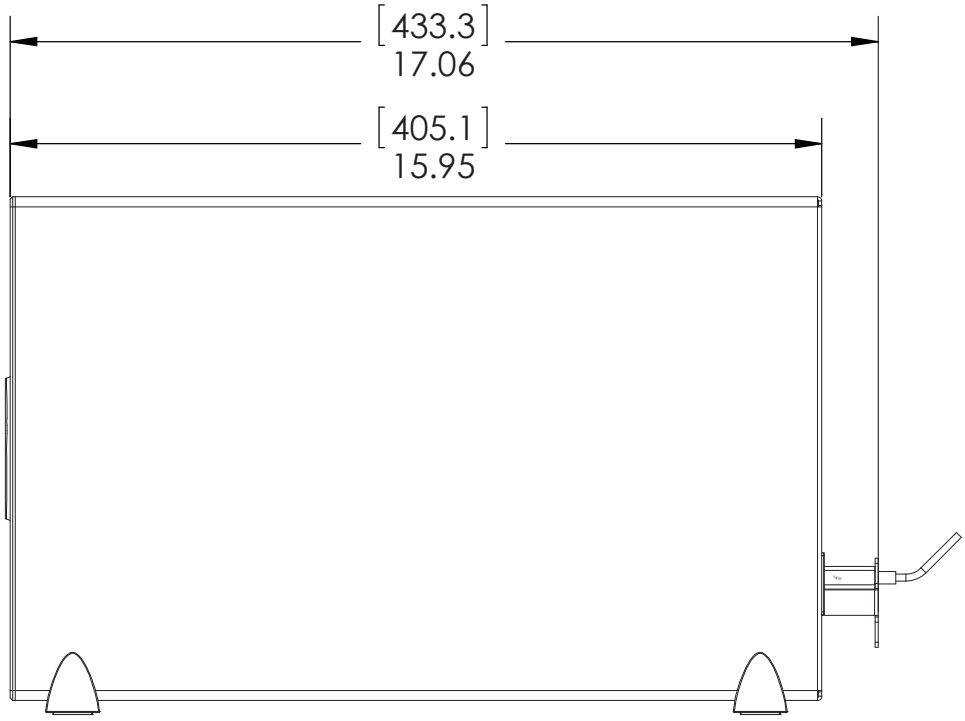
Chapter 1 – Introduction



ECHO EXPRESS III-D
FRONT VIEW



ECHO EXPRESS III-D
REAR VIEW

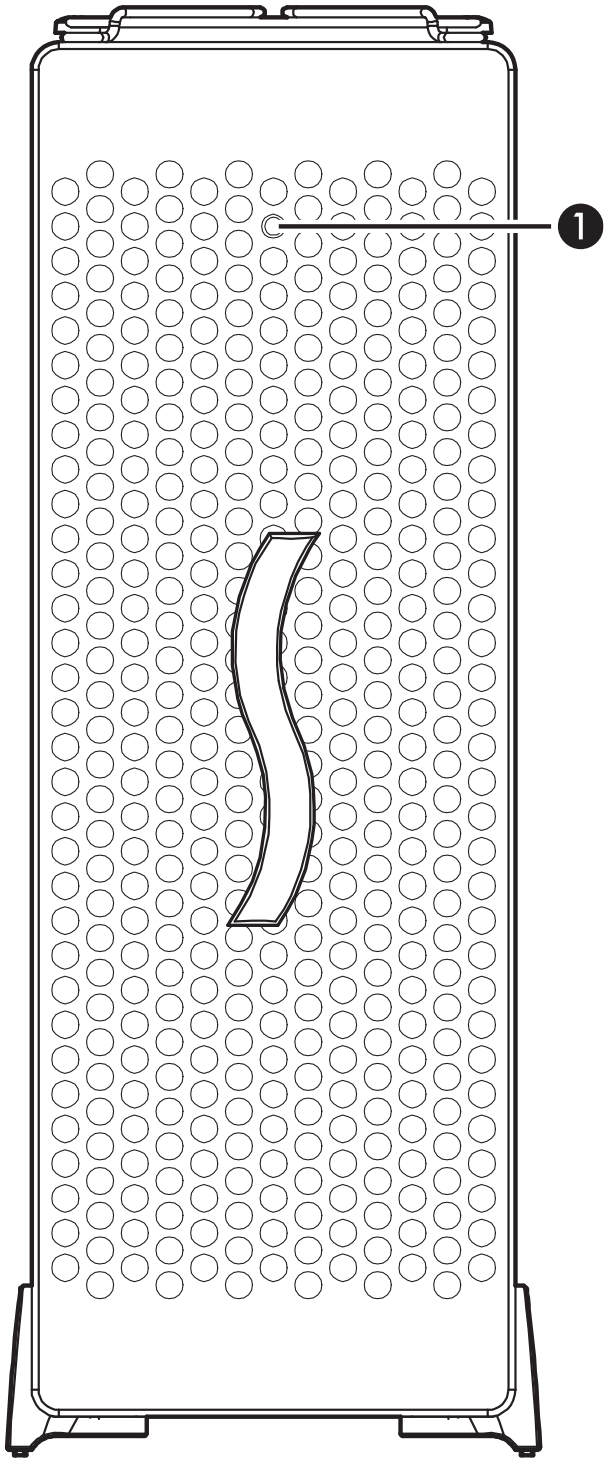


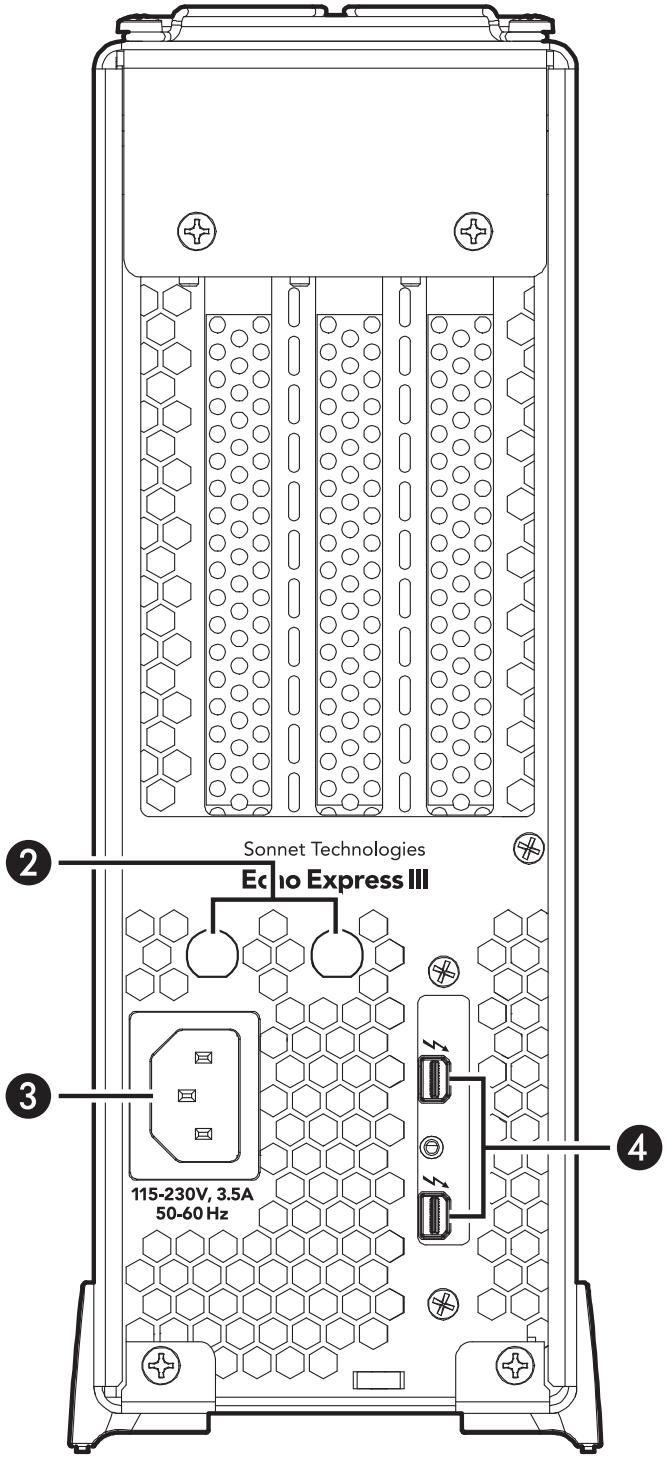
ECHO EXPRESS III-D SIDE VIEW

Congratulations on your purchase! The Echo Express III-D is a Thunderbolt 2-to-PCI Express card expansion chassis; through its PCIe slots, you may connect three expansion cards to any Mac® with a Thunderbolt port to expand its capabilities in ways never before possible!

While the Echo Express III-D chassis requires no drivers, the expansion cards you install do; Thunderbolt-compatible drivers to enable them to work properly through the Thunderbolt interface are required. More information on which cards are compatible with Echo Express III-D is available at: http://sonnettech.com/support/charts/thunderbolt/index.html

Chapter 2 – Echo Express III-D Description





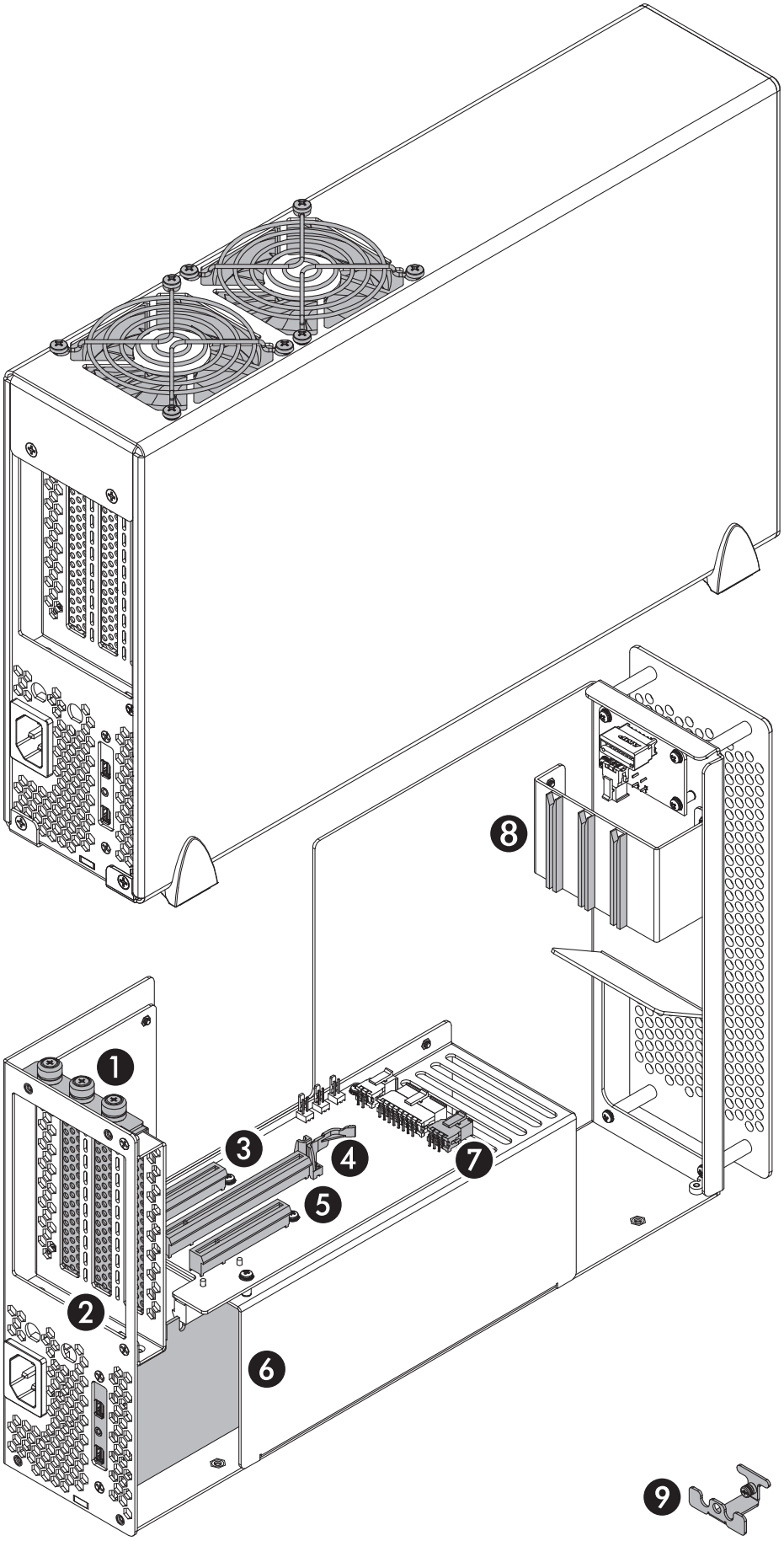
1 – Power Indicator LED
This lights when the Echo Express III-D is powered, the Thunderbolt cable between the chassis and your computer is plugged in securely, and the computer powered on.

2 – BNC Connector Mounting Holes
These accommodate the installation of BNC connectors like those used for HD/SDI output for the RED ROCKET-X transcoding card.

3 – Power Input Socket
Connect the included AC power cable here.

4 – Thunderbolt Ports
Connect a Thunderbolt cable between either port and your computer's Thunderbolt port; the other may be used to connect to another Thunderbolt device.

Chapter 2 – Echo Express III-D Description



Outer Case

Temperature-Controlled Fans

These provide cooling for the installed PCIe cards and the chassis' supporting Thunderbolt circuitry. They operate at a whisper when the cards are running cool, and automatically speed up in steps as the temperature rises. Do not block the vent holes on the front, back, or bottom of the chassis to prevent overheating.

Inner Assembly

1 – PCIe Card Bracket Locking Plate

This secures installed PCIe cards and port access covers in place.

2 – Port Access Covers

These cover openings in the chassis when PCIe slots are unoccupied.

3 – Slot 1

This is an x8 electrical (x8 mechanical) PCIe 2.0 slot. It is also compatible with PCIe 1.1 and 3.0 cards.

4 – Slot 2

This is an x8 electrical (x16 mechanical) PCIe 2.0 slot. It is also compatible with PCIe 1.1 and 3.0 cards.

5 – Slot 3

This is an x4 electrical (x8 mechanical) PCIe 2.0 slot. It is also compatible with PCIe 1.1 and 3.0 cards.

6 – Thunderbolt Interface Card

This card is installed in its own slot and may not be moved to another slot.

7 – 6-Pin Auxilliary Power Connector

Plugged into this connector is the auxilliary power cable for cards requiring extra power, such as the Avid Pro Tools|HDX or RED ROCKET-X.

8 – PCIe Card Guides

When installing full-length cards, use these to support and secure the cards.

9 – Thunderbolt Connector Lock

This secures Thunderbolt connectors plugged into the Echo chassis' Thunderbolt ports to prevent accidental cable disconnection. This lock is not compatible with optical Thunderbolt cables.

Chapter 3 – PCIe Card Installation and Chassis Setup Steps

1. Remove the Echo Express III-D from its packaging, and then set it on a flat, level surface.

2. Using a Phillips screwdriver, remove and set aside the four screws securing the back of the outer case to the inner assembly **(Figure 1)**.

3. Turn the Echo chassis on its side.

4. Remove and set aside the four screws securing the bottom of the outer case to the inner assembly **(Figure 1)**.

5. Tilt the Echo chassis upright.

6. Grasping the outer case with one hand, push the inner assembly into the outer case, and then gently pull out the inner assembly **(Figure 1)**. Set aside the outer case.

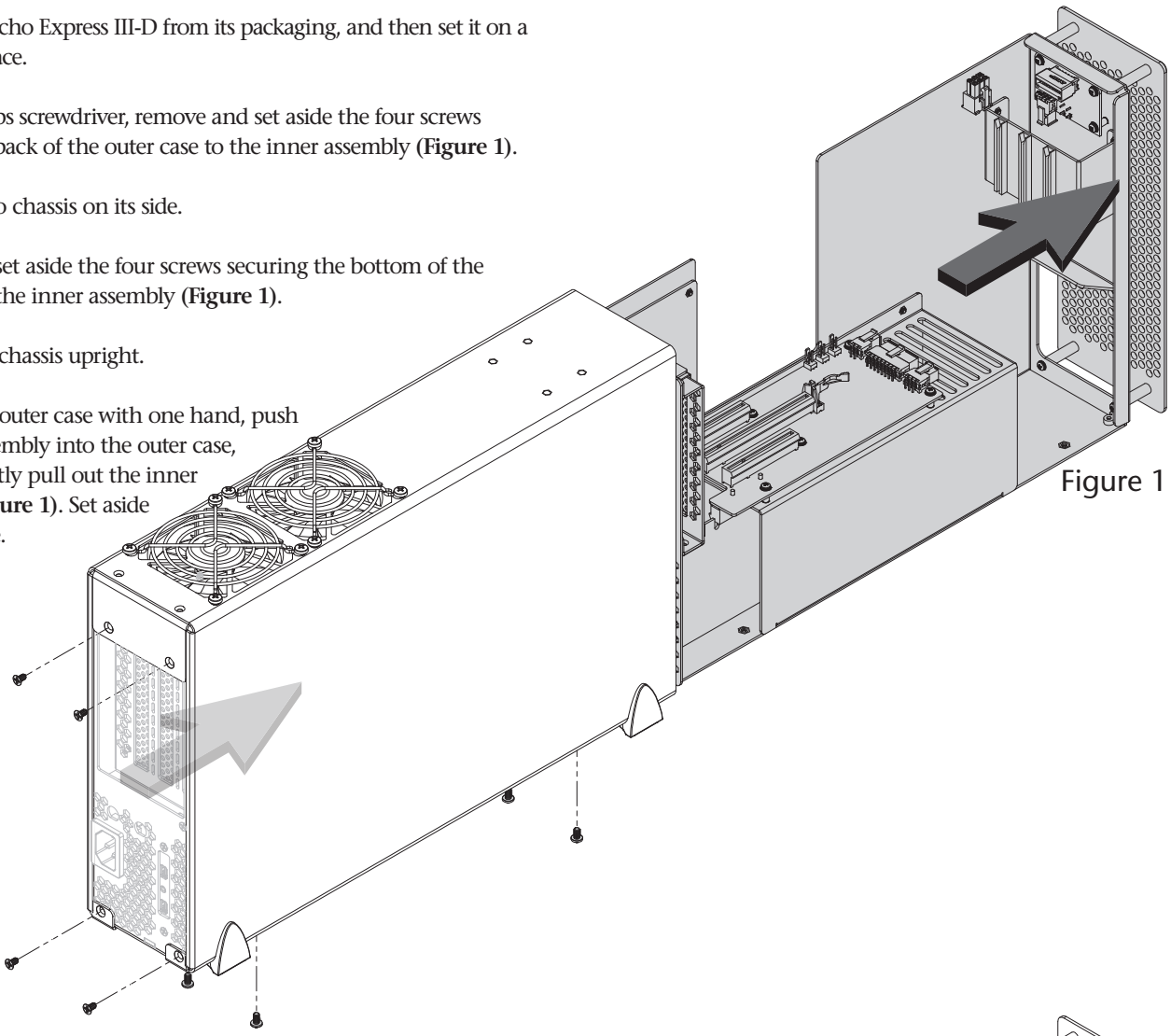


Figure 1

Support Note: To avoid damaging components due to static electricity discharge, wear an antistatic wrist strap while working inside the Echo Express chassis.

7. Loosen all three thumbscrews of the PCIe card bracket locking plate, and then remove and set it aside **(Figure 2)**.

8. Remove and set aside the port access covers **(Figure 2)**.

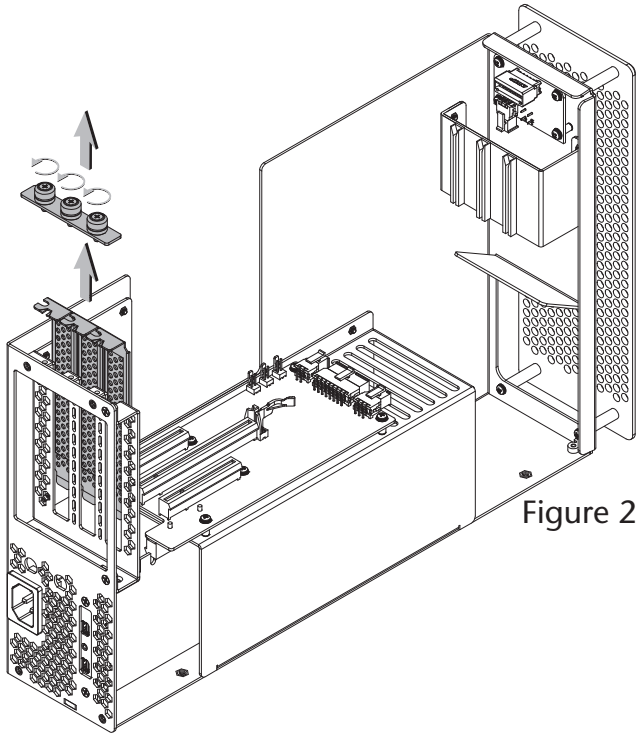


Figure 2

Chapter 3 – PCIe Card Installation and Chassis Setup Steps

WARNING: When handling computer products, take care to prevent components from being damaged by static electricity; avoid working in carpeted areas. Handle expansion cards only by their edges and avoid touching connector traces and component pins. Also, avoid touching the Echo chassis' circuit boards and any of its components.

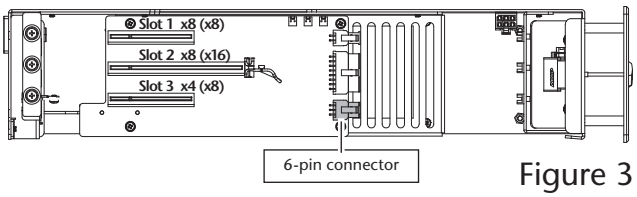


Figure 3

9. OPTIONAL STEP: If you are installing a PCIe card which requires additional power and must be connected to auxiliary power, locate the wire harness connected the 6-pin connector indicated in the graphic to the right **(Figure 3)**. Remove the cable twist tie securing the wire harness, and move the loose connector aside for later connection. Otherwise, go to the next step.

Support Note: If you are installing an Avid Pro Tools|HDX PCIe card, you will need to disconnect the Echo chassis' auxilliary power wire harness plugged into the 6-pin connector indicated in **Figure 5**, and replace it with the one included with the Avid card.

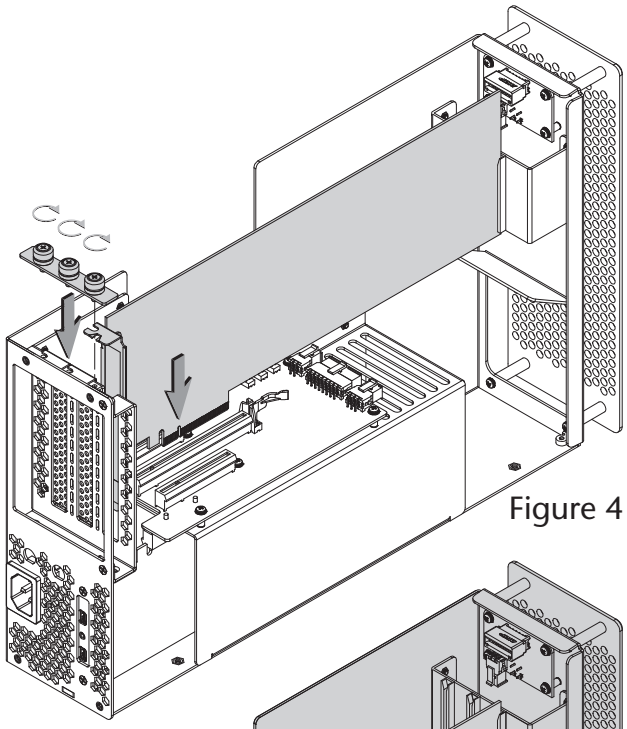


Figure 4

10. OPTIONAL STEP: If you are installing BNC connectors into the chassis' mounting holes, skip to the appendix at the end of the document for instructions. Otherwise, go to the next step.

11. Remove a PCIe card from its packaging, handling the card by its edges and without touching any components or gold connector pins.

12. Line up the card's connector with the slot, and then gently but firmly press the card straight into the slot; **do not rock the card or force the card into the slot**. If you encounter excessive resistance, check the card's connector and the slot for damage, and then try inserting the card again **(Figure 4)**.

13. Repeat steps 11 and 12 as necessary with any remaining cards.

14. If you installed a card which requires auxiliary power, connect the auxiliary power connector to it now.

15. Install the port access covers you removed previously for any unoccupied slots **(Figure 4)**.

16. Secure the cards and port access covers using the previously-removed PCIe card bracket locking plate **(Figure 4)**.

17. Grasping the outer case, gently push the inner assembly back inside **(Figure 5)**.

18. Secure the outer case to the inner assembly using the eight screws you removed previously **(Figure 5)**.

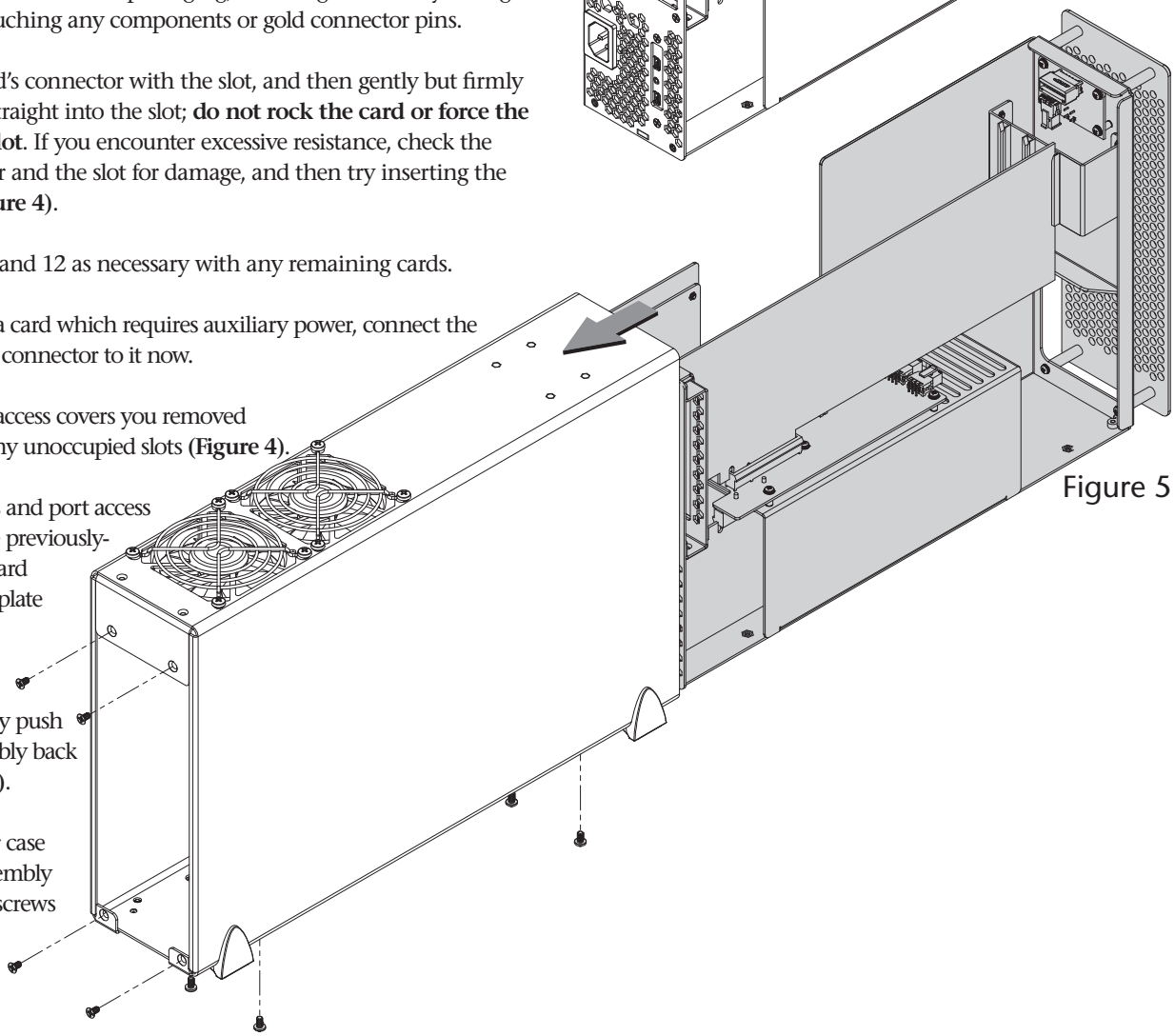


Figure 5

Chapter 3 – PCIe Card Installation and Chassis Setup Steps

19. Connect a Thunderbolt cable between either Thunderbolt port on the Echo chassis and a Thunderbolt port on your computer (or other Thunderbolt device in the chain connected to the computer). If you are daisy chaining additional Thunderbolt devices, connect another Thunderbolt cable between the downstream device and the open Thunderbolt port on the Echo chassis **(Figure 6)**.

20. Using a Phillips screwdriver, secure the Thunderbolt cable(s) to the Echo Express III-D with the supplied Thunderbolt cable lock **(Figure 6)**. Note that if you are using an optical Thunderbolt cable, the supplied Thunderbolt cable lock is not compatible, and you should skip to the next step.

21. Connect the included power cord between a wall outlet or power strip and the Echo chassis' power socket. Note that the power indicator on the Echo Express III-D will not light until the computer, and any other Thunderbolt device connected between it and the Echo chassis, is powered on.

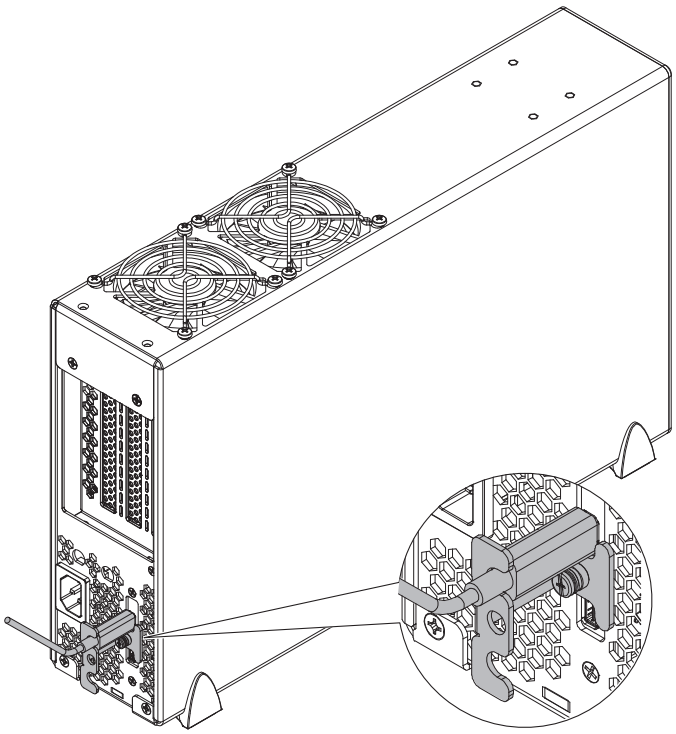


Figure 6

Chapter 4 – Verify Connections Using System Information

A – Verify the Echo Express III-D is Recognized

1. With the Echo chassis powered and connected to the computer, turn on the computer.

2. From the Apple menu, select About This Mac; the System Information application will launch.

3. When the *About This Mac* window opens, click More Info; a summary of specifications will appear.

4. Click System Report; a full report window will appear.

5. In the *System Information* window, click Thunderbolt under the Hardware header in the left column **(Figure 7)**.

6. In the top right column under the Thunderbolt Device Tree header, you will see the computer, followed by "Echo Express III" **(Figure 7)**.

Support Note: If "Echo Express III" is not listed, disconnect and reconnect the Thunderbolt cable between the computer and Echo chassis. Note that it is not necessary to shut down the computer before disconnecting and reconnecting the cable.

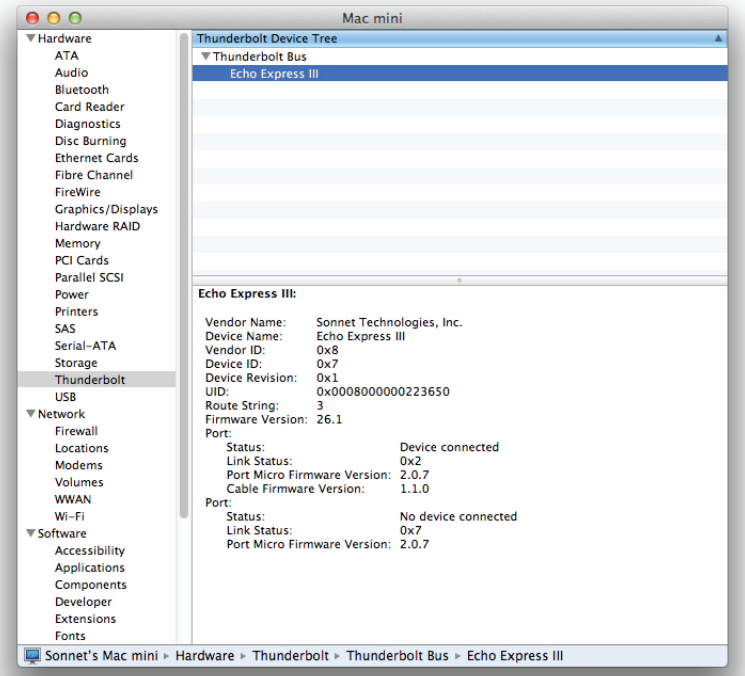


Figure 7

B – Verify Installed Cards are Recognized

1. When a card is installed into one of Echo chassis' PCIe slot(s), the PCIe slot (listed as a port), the Status should appear as connected.

2. Click PCI Cards under the Hardware header in the left column **(Figure 8)**.

3. At the top of the right column, installed cards are listed. By selecting a card at the top, detailed information is listed. You should see "Yes" next to Driver Installed and Tunnel Compatible, otherwise the card or driver may not be Thunderbolt compatible **(Figure 8)**.

Support Note: While Echo Express expansion chassis require no drivers, installed cards require Thunderbolt-compatible drivers to enable their use.

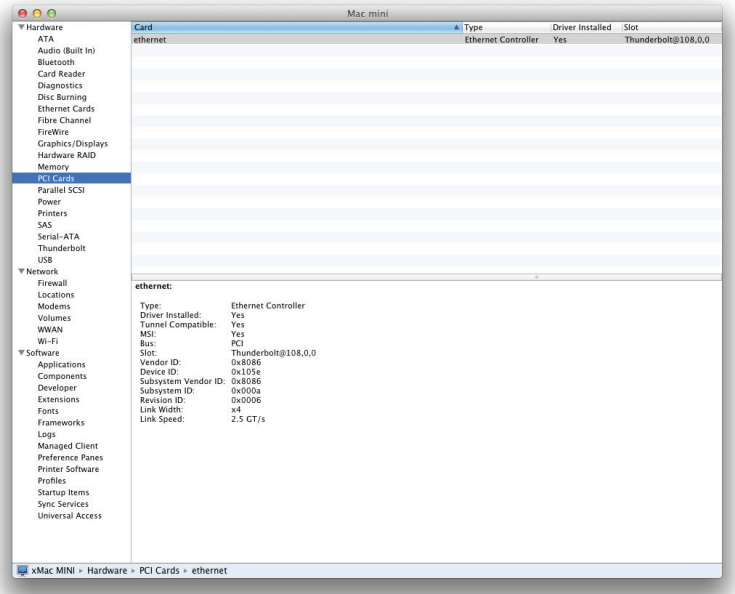


Figure 8

Chapter 5 – Tips, General Information, and Known Issues

TIPS, GENERAL INFORMATION

Keeping the Cards Cool
With its optimized airflow design and temperature-controlled fans providing cooling at all times, Echo Express III-D provides adequate cooling for the installed cards. *Do not operate the Echo Express III-D with the outer case removed, and do not block any of the vents*! Otherwise, the installed cards and Echo Express' components may overheat.

Hot Plugging the Echo Express Expansion Chassis
When certified Thunderbolt-compatible cards (used with Thunderbolt-compatible drivers) are installed in Echo Express III-D, you may connect and disconnect the chassis while the computer is on. Of course, if you have anything connected to the cards, such as storage devices, cameras, etc., follow proper procedures for disconnecting those devices before unplugging the Echo Express chassis.

There's No Need to Unplug the Power Cable
Because Echo Express automatically powers on and off with the computer to which it's connected, there's no power switch, nor is there any need to disconnect the power cable under normal use.

Power Indicator LED Operation
Because Echo Express automatically powers on and off with the computer to which it's connected, the power indicator LED only turns on when the computer is on, and turns off when the computer is sleeping or powered off.

Connecting Additional Thunderbolt Devices
You may connect up to six Thunderbolt devices total in a daisy chain, including the Apple Thunderbolt Display.

Using Expansion Cards Without Drivers
Some Thunderbolt-compatible expansion cards, like Sonnet's Allegro™ FW800 PCIe FireWire® adapter and Sonnet's Tempo™ SATA Pro 6Gb eSATA cards, use drivers built into the OS.

Replacing Cards or Adding Cards After Initial Installation
If you decide to replace or add a card to Echo Express after the initial setup, shut down the computer, and then disconnect the power cord and Thunderbolt cables before installing a card.

KNOWN ISSUES

Not all PCIe Cards Will Perform at 100%
Thunderbolt 2's PCIe bandwidth is limited to 20Gbps. While many cards will operate at full performance, some may not due to the fact they require more bandwidth than Thunderbolt is capable of delivering.

OS X Updates May Break Compatibility
Specific device drivers that work under one version of OS X may not work under a later version. *Before updating to the latest OS*, we recommend that you contact your PCIe cards' manufacturers to verify that the existing drivers work with the new OS version. Note that other software updates for the computer may also break compatibility.

Some Devices' Performance May be Affected by Where They Are Connected in a Thunderbolt Chain
However small, Thunderbolt introduces latency to a device chain. If you expand with additional Thunderbolt expansion chassis, you may need to experiment with which cards work better in chassis closer to or farther from the computer in the chain.

PCIe CARDS ARE NOT HOT-PLUGGABLE!
Never install a PCIe card into Echo Express while it is connected to a computer or power outlet! If you do, you risk injury, and damage to the card, chassis, and computer.

Chapter 6 – Specifications, Precautions, FCC Compliance, and Support Information

Specifications

External Connectors	Two Thunderbolt Power (C14-type)
Expansion Slots	• One x8 mechanical (x8 electrical) PCIe 2.0 • One x16 mechanical (x8 electrical) PCIe 2.0 • One x8 mechanical (x4 electrical) PCIe 2.0
PCIe Cards Supported	• One full length, full-height, double-width PCIe card, plus one single-width card or • Three full length, full-height, single-width PCIe cards
Compatible PCIe Cards	See Sonnet Website (www.sonnettech.com)
Power Supply	Universal 300W, 115-230V AC, 50-60 Hz(1)
Operating Temperatures	+32˚ F to +95˚ F (0˚ C to +35˚ C)
Dimensions WxDxH	3.8 x 16 x 10.2 in. (9.7 x 40.5 x 25.9 cm)
Weight (Echo Express Pro)	7.5 lbs (3.4 kg)
RoHS Compliant	Yes
Package Contents	• Echo Express III-D Chassis(2) • Power Cord • Thunderbolt Connector Lock(3) • User's Guide

1. Power supply will operate at 90-115V AC, with linear power deration of 240W-300W over that range.
2. Thunderbolt cable required; available at the Apple Store and your reseller
3. Not compatible with optical Thunderbolt cables.

SAFETY PRECAUTIONS

Please read this section carefully before proceeding. These precautions explain the correct and safe use of this device, thereby helping to prevent injury to you or others, and also help you to minimize the risk of damaging the device.

Warnings

Always follow the basic warnings listed here to avoid the risk of serious injury or death from electrical shock, short-circuiting, fire, and other hazards. These warnings include, but are not limited to:

- Do not attempt to modify the enclosure. If this device appears to be malfunctioning, contact your reseller or local distributor.
- Do not drop the chassis; dropping or mishandling chassis may result in a malfunction leaving the product inoperable.
- Do not insert your fingers or foreign objects inside the slot(s).

Warnings (continued)

- Do not expose the device to rain, use it near water or containers that contain liquids which might spill into any openings, or in damp or wet conditions.
- If unusual smells, sounds, or smoke come from the device, or if liquids enter it, switch it off immediately and unplug it from the electrical outlet.
- Follow the instructions in this manual carefully; contact your reseller or local distributor for additional advice not covered in this User's Guide.

FCC Compliance

Echo Express III complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: This device may not cause harmful interference, AND this device must accept any interference received, including interference that may cause undesired operation.

Contacting Customer Service

The Sonnet Web site located at www.sonnettech.com has the most current support information and technical updates. Before you call Customer Service, please check our Web site for the latest updates and online support files, and check this User's Guide for helpful information.

When you call Customer Service, have the following information available so the customer service staff can better assist you:

- Product name
- Date and place of purchase
- Computer model
- PCIe card models
- Operating system version
- Software/firmware versions

USA Customers

If further assistance is needed, please contact **Sonnet Customer Service** at:
Tel: 1-949-472-2772
(Monday–Friday, 7 a.m.–4 p.m. Pacific Time)
E-mail: support@sonnettech.com

For Customers Outside the USA

For support on this product, contact your reseller or local distributor.

Visit Our Web Site

For the most current product information and online support files, visit the Sonnet Web site at www.sonnettech.com/support/. Register your product online at http://registration.sonnettech.com to be informed of future upgrades and product releases.

Appendix A – BNC Connector Installation Steps

1. Remove and set aside the two screws securing the Thunderbolt interface card to the inner assembly **(Figure A-1)**.

2. Gently push down on the edge of the card to disengage the card from its slot **(Figure A-1)**.

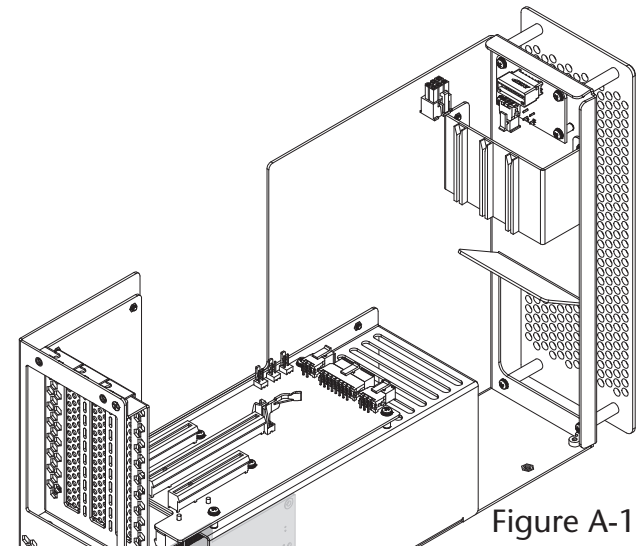


Figure A-1

3. Grasping the card by its bracket, rotate the bracket out of the inner assembly, and then pull out the card **(Figure A-2)**. Set aside the Thunderbolt interface card on flat surface, component side down.

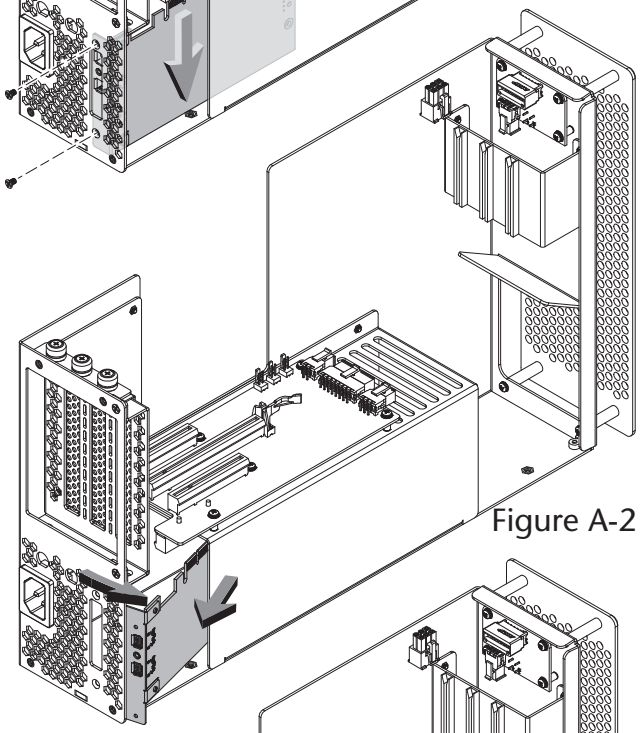


Figure A-2

4. Insert the BNC connectors through the BNC connector mounting holes in the inner assembly **(Figure A-3)**. Route the cables out over the top of the PCIe slot riser card.

5. Slide the BNC connector nuts over the cables, and then secure the connectors to the chassis **(Figure A-3)**.

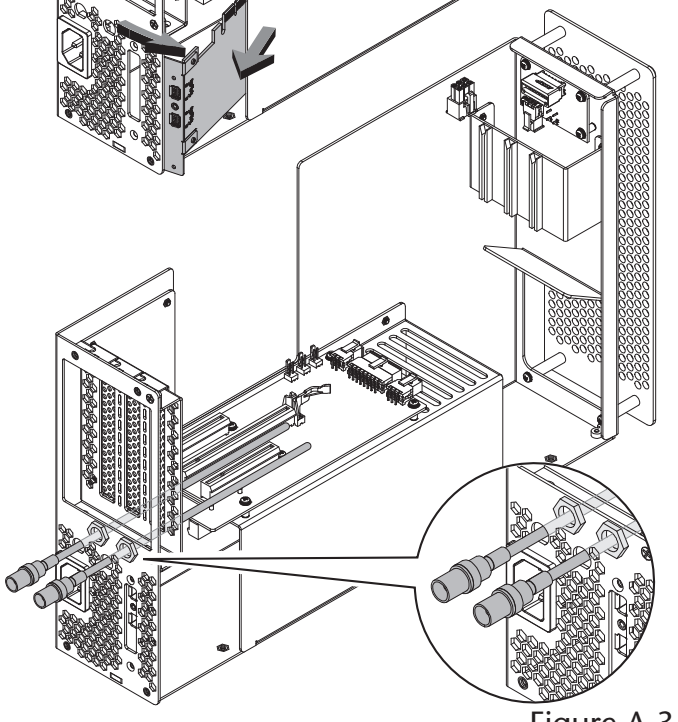


Figure A-3

Appendix A – BNC Connector Installation Steps

6. Grasping the Thunderbolt interface card by its bracket, insert the card back into the inner assembly **(Figure A-4)**.

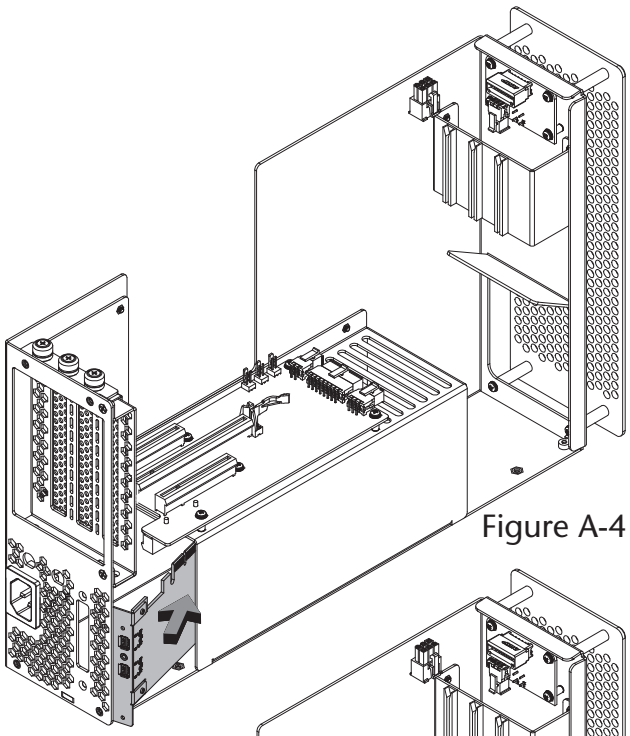


Figure A-4

7. Line up the card's connector with the slot, and then gently but firmly press the card straight into the slot; **do not rock the card or force the card into the slot**. If you encounter excessive resistance, check the card's connector and the slot for damage, and then try inserting the card again **(Figure A-5)**.

8. Using the two screws you removed previously, secure the Thunderbolt interface card to the inner assembly; do not overtighten the screws **(Figure A-5)**.

9. Return to step 11 on page 5 to complete the PCIe card and chassis setup steps.

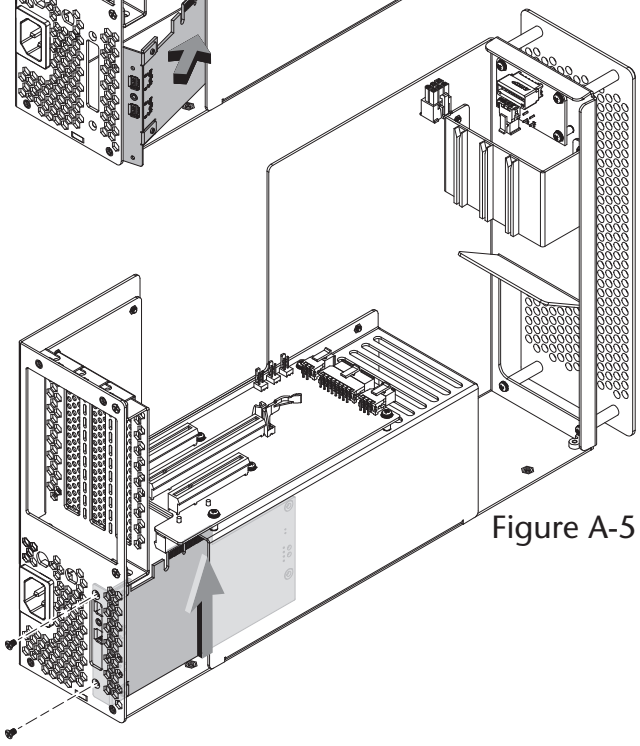


Figure A-5

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